

We claim:

- 5 1. A process for preparing dendritic or hyperbranched polyurethanes by
 - 1) reacting diols or polyols having at least one tertiary nitrogen atom and at least two hydroxyl groups of differing reactivity toward isocyanate groups with diisocyanates or polyisocyanates to form an addition product, with the diols or polyols and diisocyanates or polyisocyanates being selected so that the addition product has, on average, one isocyanate group and more than one hydroxyl group or one hydroxyl group and more than one isocyanate group,
 - 2) converting the addition product from step 1) into a polyaddition product by intermolecular reaction of the hydroxyl groups with the isocyanate groups, and with a reaction with a compound containing at least two hydroxyl groups, mercapto groups, amino groups or isocyanate groups also being able to be carried out first,
 - 15 3) if desired reacting the polyaddition product from step 2) with a compound containing at least two hydroxyl groups, mercapto groups, amino groups or isocyanate groups.
- 20 2. A process as claimed in claim 1, wherein the diols are reacted with polyisocyanates or polyols are reacted with diisocyanates in step 1).
- 25 3. A process as claimed in claim 1 or 2, wherein the diols or polyols used in step 1) are aliphatic.
4. A process as claimed in any of claims 1 to 3, wherein the diols or polyols used in step 1) are obtained by Michael addition of compounds having at least one primary or secondary amino group and at least one hydroxyl group onto ethylenically unsaturated compounds having at least one hydroxyl group.
- 30 5. A process as claimed in claim 4, wherein the ethylenically unsaturated compound is selected from among (meth)acrylates of diols or polyols, vinyl alcohols and allyl alcohols.
- 35 6. A process as claimed in claim 5, wherein the ethylenically unsaturated compound is a (meth)acrylate of an aliphatic diol which is reacted with an aliphatic amino

alcohol which has one primary or secondary amino group and one, two or three hydroxyl groups.

7. A process as claimed in any of claims 1 to 6, wherein only or predominantly the hydroxyl groups of the diols or polyols having the higher reactivity toward isocyanate groups are reacted with the isocyanate groups in step 1) and the hydroxyl groups of the diols or polyols having the lower reactivity toward isocyanate groups are reacted in step 2).
- 10 8. A dendritic or hyperbranched polyurethane obtainable by a process as claimed in any of claims 1 to 7.
9. A dendritic or hyperbranched polyurethane as claimed in claim 8, which has, on average, at least three terminal hydroxyl and/or isocyanate groups.
- 15 10. The use of a dendritic or hyperbranched polyurethane as claimed in claim 8 or 9 as component for producing polyaddition or polycondensation polymers, coatings, paints and varnishes, adhesives, sealants, casting elastomers and foams and as phase compatibilizers, rheological aids, thixotropes, nucleating agents or as carriers for active compounds or as catalyst support.
- 20